Workshop on "Interactions between internal gravity waves and meso/submesoscale currents in the ocean"

February 10–11, 2018 at Portland State University

Organizers: Patrice Klein (Caltech/JPL) & Edward D. Zaron (Portland State University)

Location: PSU Engineering Building
"Northwest Center for Engineering, Science, and Technology"
1930 SW 4th Avenue, Portland, Oregon 97201

Agenda

Saturday February 10, 2018

9:00: Building unlocked.

9:30–10:00: Pick up nametags; upload presentations.

10:00–10:15 ***Introduction: Motivation of this workshop, Ed Zaron and Patrice Klein.***

10:15–12:30: I - Partition between internal gravity waves and balanced motions in the world ocean

10:15–10:45: Brian Arbic: Global modeling of internal tides and the internal gravity wave continuum.

10:45–11:05: Kurt Polzin: Internal gravity waves in the upper ocean.

11:05–11:25: Jay Shriver & Maarten Buijsman: The effect of resolution and data-assimilation on the predictability of internal tides in HYCOM.

11:25–11:45: Sung Yong Kim: Can we partition IGWs and BMs from HFR observations?

11:45–12:05: Joern Callies: Submesoscale sea surface slope spectra.

12:05–12:30: *Short responses to morning talks and discussion*

12:30–2:00: LUNCH

2:00–2:20: Teri Chereskin/Sarah Gille: Internal gravity waves and balanced motions from ADCP in the world ocean.

2:30–4:00: II - Interactions between internal gravity waves and balanced motions. Do they lead to significant energy exchanges? Part I

2:30-2:50: Ed Zaron: Observations of non-stationary internal tides.

2:50-3:10: Sam Kelly: Simulations of low-mode internal tides in realistic mean flows.

3:10-3:30: Michael Dunphy: Low-mode internal tide propagation in a turbulent eddy field – 3D scattering and dispersion of internal tides by balanced motions.

3:30-3:50: Cesar Rocha: Extraction of energy from barotropic geostrophic flow by near-inertial waves.

4:00–4:30: Coffee Break

4:30–5:30: II - Interactions between internal gravity waves and balanced motions. Do they lead to significant energy exchanges? Part II

4:30–4:50: Leif Thomas: Rapid vertical propagation of near-inertial waves through interactions with frontal ageostrophic circulations.

4:50–5:10: David Straub: Forced near-inertial motion and dissipation of low-frequency kinetic energy in a wind-driven channel flow.

5:10–5:30: Roy Barkan/Jim McWilliams: Stimulated imbalance and the enhancement of eddy kinetic energy dissipation by internal waves.

5:30–6:00: *Discussion: What are the limitations/assumptions of the different approaches presented by the speakers? How to connect the different approaches and diagnose the different mechanisms in the world ocean?*

DINNER

Sunday February 11, 2018

8:00: Building unlocked.

8:30–9:00: Upload presentations.

9:00–10:00: III - How to better diagnose IGWs and BMs exploiting the synergy of numerical models, satellite (altimetry) and dedicated in-situ experiments. Part I

9:00–9:20: Lee-Lueng Fu: SWOT mission: the challenge of separating BMs and IGWs.

9:20–9:40: Jinbo Wang: The challenge of modelling for SWOT (Cal/Val and Science).

9:40–10:00: Jonathan Gula: Internal-tides dynamics in a realistic eddying environment over the northern Mid-Atlantic Ridge.

10:00–10:30: *Discussion: Are ocean models capable of realistically simulating high-frequency motions? What do we expect to learn by confronting high-resolution models with SWOT observations?*

10:30–11:00: Coffee Break

11:00–12:00: III - How to better diagnose IGWs and BMs exploiting the synergy of numerical models, satellite (altimetry) observations and dedicated in-situ experiments. Part II

11:00–11:20: Bo Qiu and Hector Torrres (given by Patrice Klein): Some properties of KE and SSH in terms of the impact of IGWs and BMs (seasonal and regional diversity in the world ocean).

11:20–11:40: Clement Ubelmann: Some evidence of the different impacts of IGWs and BMs on SSH using conventional altimetry.

11:40–12:00: Nicolas Rascle: Observations of fine scale current gradients using sea surface roughness: possibilities of coming measurements such as SWOT, geostationary sunglint, multi-angle SARs, etc.

12:00–1:30: LUNCH

1:30–2:30: III - How to better diagnose IGWs and BMs exploiting the synergy of numerical models, satellite (altimetry) observations and dedicated in-situ experiments. Part III

1:30–1:50: Sarah Gille: Opportunities of the fast sampling period for in situ sampling.

1:50–2:10: Kyla Drushka/Luc Rainville: Observations of waves and balanced motions using Gliders.

2:10–2:30: Bruce Cornuelle: Tides and surface waves affected by flow variability: studies in forward and inverse models.

2:30–3:30: *Discussion on session III.*

3:30–4:00: Coffee Break

4:00–5:00: *General discussion on "The Interactions Between IGWs and BMs": Future Plans*

What new modelling efforts (idealized and realistic) are needed to understand these interactions, in particular, in the perspective of the future satellite missions (SWOT)?

How can we exploit the synergy of model results, multiple satellite observations and in situ observations to diagnose these interactions?

WORKSHOP ENDS

Logistics

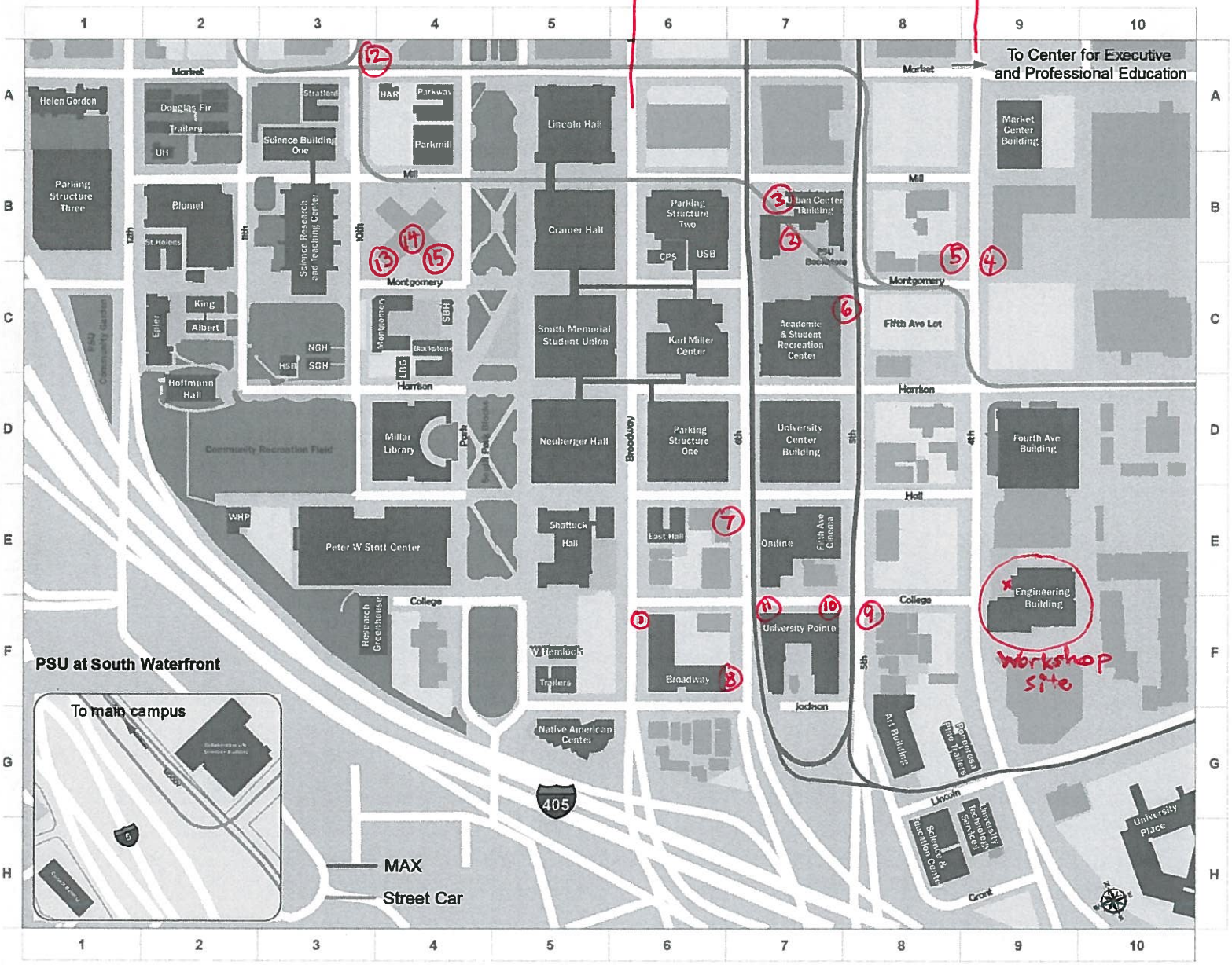
- Location: The workshop will be held in the Auditorium of the PSU Engineering Building at 1930 SW 4th Avenue, room EB102. The front doors of the building will be unlocked 9am on Saturday and 8am on Sunday, and the atrium will be staffed to accommodate late arrivals.
- Internet access: The "PSU" and "PSU Guest" public wifi networks will be available to you on campus. The latter requires you to accept terms of service. The bandwidth of these networks is unknown, and you may wish to consider providing your own cell-phone-based wifi access point.
- Computer/Projector: The auditorium is equipped with a Windows computer for showing the presentations. Please bring your talk as a PDF document for upload and presentation from the computer provided.
- Food and breaks: Coffee breaks will be provided by the workshop organizers. Please see the attached map for nearby lunch and breakfast options open on the weekend. By walking you will likely find many other options not listed on the map.
- Transportation and parking: Parking is generally metered in downtown Portland, and finding a parking spot can be difficult near PSU. The PSU area is served by the MAX (light rail), the Portland Streetcar, and TriMet buses.
- Weather: It is likely to be raining and/or misting; although, heavy rain is relatively rare. Puddles abound.
- Local point of contact: Ed Zaron, `ezaron@pdx.edu`, 503-725-2435 (office; OK to leave voicemail), 503-449-2681 (cell; OK for voice or text message, but do not leave voicemail).
- Workshop web site with links to public transportation: `http://web.cecs.pdx.edu/~zaron/pub/SWOT.html`

Downtown
More options,
including "Higgins"

Waterfront
Park, Marriott
etc.

and State University Campus

Portland St
UNIVE



① Chipotle
② Starbucks
③ Pizzacato
④ Laughing Planet
⑤ Pizza Schmizza
⑥ Pita Pit
⑦ Hot Lips Pizza
⑧ Starbucks
⑨ Duck House Chinese
⑩ Einstein Bagels
⑪ Joe's Burgers
⑫ McMenamin's Pub
⑬ Starbucks
⑭ Rogue Pub
⑮ Subway Sandwiches

Attendees (updated February 9, 2018)

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